




... for a brighter future



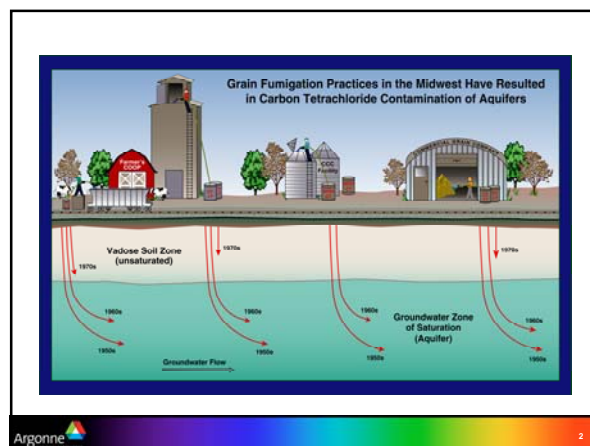
U.S. DEPARTMENT OF ENERGY
ARGONNE NATIONAL LABORATORY
A U.S. Department of Energy Laboratory
Managed by The University of Chicago

Environmental Application CPT Technology Case Study—Kansas

Lorraine M. LaFreniere, Ph.D.
Argonne National Laboratory
Applied Geosciences and Environmental Management
Environmental Science Division




United States Department of Agriculture
Work sponsored by Commodity Credit Corporation,
United States Department of Agriculture



Case History—Kansas CCC/USDA Former Grain Storage Facility in Operation from the 1950s to early 1970s

The Problem


- Carbon tetrachloride detected in 1986 in two public water supply wells at levels exceeding the EPA's MCL of 5 µg/L.
- 1987-1998 investigations:
 - Soil gas surveys
 - Sampling of existing public and domestic wells
 - Installation of a series of monitoring wells
 - Surface soil sampling
 - Geophysical survey to map the bedrock topography of the area
 - Pump tests
 - Modeling of fate and transport
 - Risk assessment



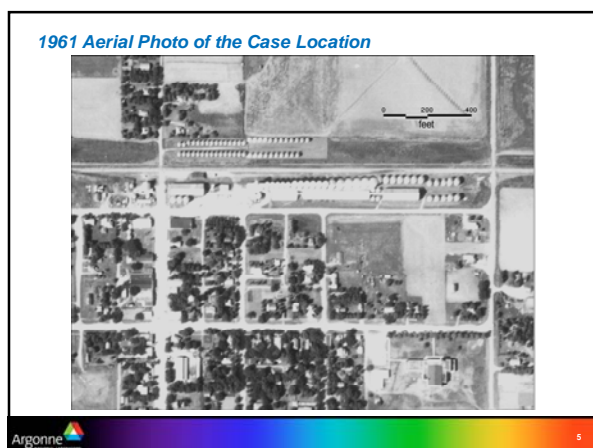
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Case History A Investigation and Monitoring of the Area over the Last 17 Years Confirmed the Historic Release of Carbon Tetrachloride at Three Locations

- The former CCC/USDA grain storage facility
- The Co-op
- Area associated with former retail store




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Case History A Focus of the Current Investigation

- Verify and update the conceptual site model
- Investigate sources of previously identified carbon tetrachloride contamination in groundwater
- Develop a series of recommendations regarding remediation options for the site



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Site A The Investigation

- CPT units served as the primary investigative tool.
- Vertical profiling investigated potential soil-to-groundwater pathways at 20 locations:
 - 250 soil samples derived from recovered cores
 - 196 groundwater samples

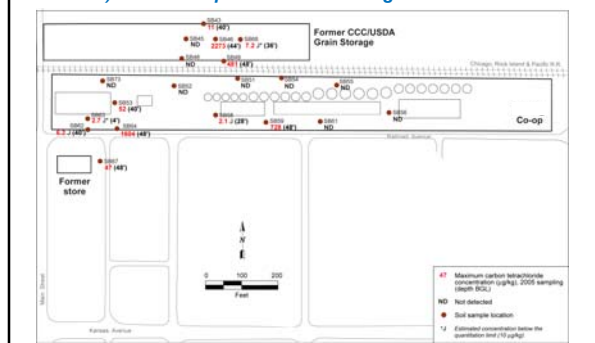


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Carbon Tetrachloride Concentrations (maximum at each location) in Soil Samples from Three Target Areas



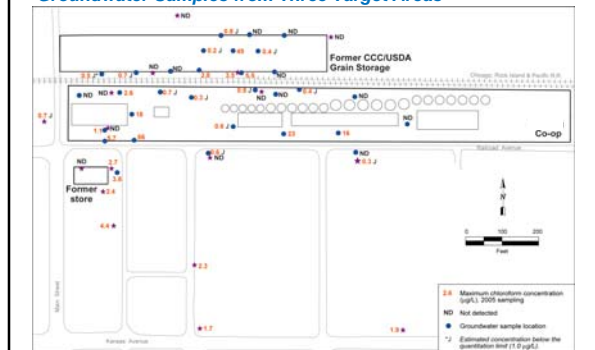
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Carbon Tetrachloride Concentrations (maximum at each location) in Groundwater Samples from Three Target Areas

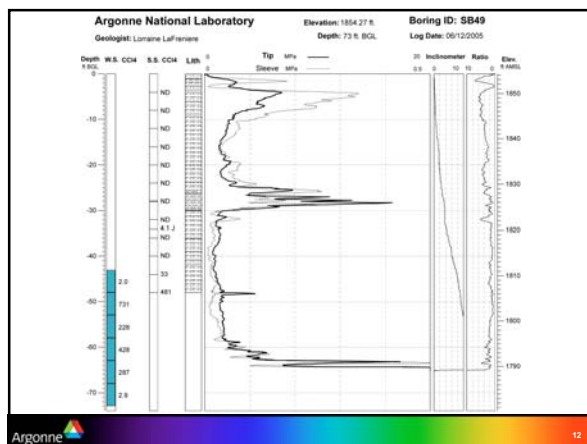


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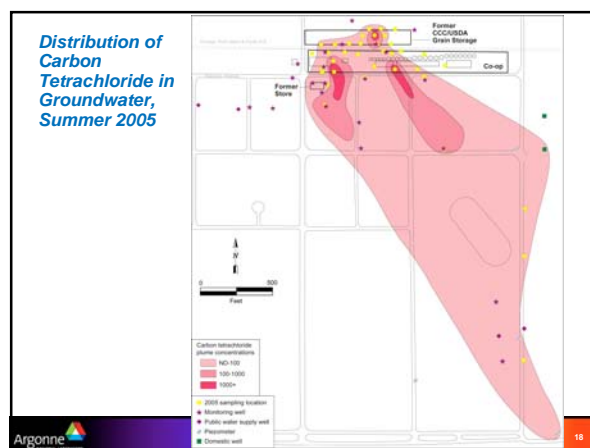
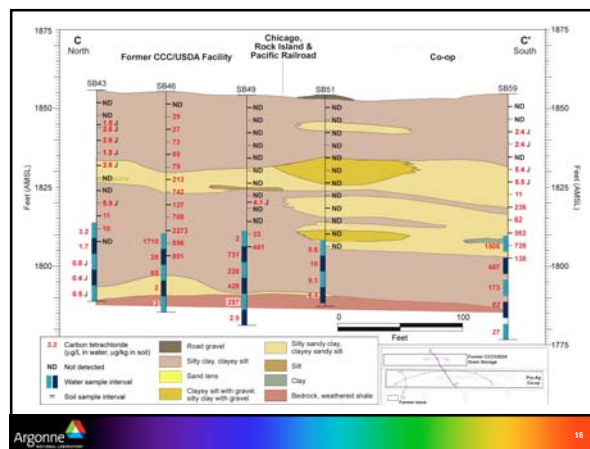
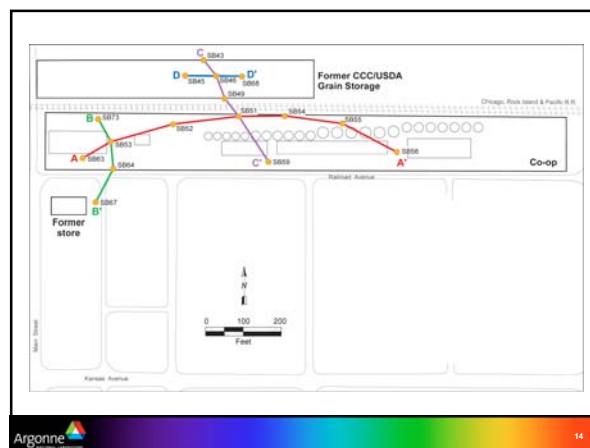
Chloroform Concentrations (maximum at each location) in Groundwater Samples from Three Target Areas



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Case History Site A
Conclusions

- Three point sources identified—confirmation of PRPs
- Surface-to-groundwater pathway for contamination established
- Installation of monitoring wells with CPT
- Point source remediation alternative being identified
- Cooperation among PRPs
- Remediation alternatives may involve use of CPT to inject materials
- CPT to monitor progress and effectiveness of remediation